

In re: Hwang, et al.
Serial No. 09/430,501
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Page 2 of 11

Amendments to the claims:

This listing of the claims will replace all prior versions and listings of the claims in the application:

Listing of Claims:

1. (Canceled).

2. (Currently Amended) A method ~~according to Claim 1~~ for modem carrier drop detection comprising the steps of:

demodulating a received signal to provide signal data;

detecting a signal strength for a portion of the received signal corresponding to a selected data pattern in the signal data;

establishing a carrier drop detection threshold at a determined level relative to the signal strength; and

detecting a carrier drop based on the carrier drop detection threshold;

wherein the modem uses a V.8 standard during startup and the step of ~~updating~~ establishing comprises the step of ~~updating~~ establishing the carrier drop detection threshold responsive to a selected data pattern in the signal data corresponding to at least one of a call menu (CM) signal and a joint menu (JM) signal.

3. (Previously presented) A method for modem carrier drop detection comprising the steps of:

demodulating a received signal to provide signal data;

setting a flag to indicate receipt of at least one of a valid call menu (CM) signal and a valid joint menu (JM) signal;

latching an output of a signal strength detector responsive to setting of the flag, the signal strength detector being coupled to the received signal and the output of the signal strength detector corresponding to a signal strength level of the received signal;

setting a carrier drop detection threshold to a value predetermined amount below the latched output of the signal strength detector responsive to setting of the flag; and

detecting a carrier drop based on the carrier drop detection threshold.

3 ~~4~~.² (Original) A method according to Claim ~~3~~² wherein the signal strength detector is a magnitude detector.

4 ~~5~~.² (Original) A method according to Claim ~~3~~² wherein the signal strength detector is an energy detector.

5 ~~6~~.⁴ (Previously presented) A method according to Claim ~~5~~⁴ wherein the step of setting a carrier drop detection threshold further comprises the step of setting the carrier drop detection threshold to a level about 4 dB below the latched output of the energy detector responsive to setting of the flag.

6 ~~7~~.² (Previously presented) A method according to Claim ~~3~~² wherein the detecting a carrier drop step further comprises the step of detecting a carrier drop corresponding to a silence transmission terminating a V.8 standard phase 1 and wherein the detecting a carrier drop step is followed by the step of conditioning the modem to receive a phase 2 information (INFO0) signal.

7 ~~8~~.⁶ (Original) A method according to Claim ~~7~~⁶ wherein the conditioning step further comprises the step of starting a differential phase shift keyed (DPSK) receiver that receives the INFO0 signal.

8 ~~9~~.² (Original) A method according to Claim ~~3~~² wherein the step of setting a flag further comprises setting a predetermined memory location as the flag.

9 ~~10~~.² (Original) A method according to Claim ~~3~~² wherein the step of setting a flag further comprises the step of setting a latch output line to an active state.

11. (Canceled).

¹¹ 12. (Currently Amended) A carrier drop detection system according to Claim
[[11]] ¹⁴ wherein the demodulator is a frequency shift keyed (FSK) demodulator.

¹⁰
13. (Canceled).

¹⁰ 14. (Currently Amended) A carrier drop detection system according to Claim 13
comprising:

a demodulator that demodulates a received signal to provide signal data;

a threshold circuit coupled to the demodulator that latches a carrier drop detection
threshold at a level based on the received signal responsive to a selected data pattern in the
signal data; and

a carrier drop detection circuit coupled to the threshold circuit that detects a carrier
drop based on the carrier drop detection threshold, wherein the carrier drop detection circuit
further comprises:

an energy detector having an output corresponding to an energy level of the
received signal, the output of the energy detector being latched responsive to the
selected data pattern in the signal data; and

a comparator coupled to the output of the energy detector and to the carrier
drop detection threshold; and

wherein the threshold circuit further comprises a combiner coupled to the output of
the energy detector and an offset that outputs the carrier drop detection threshold as the
latched output of the energy detector reduced by the offset.

¹² 15. (Currently Amended) A carrier drop detection system according to Claim
[[13]] ¹⁴ wherein the threshold circuit further comprises a multiplier coupled to the output of
the energy detector and a coefficient that outputs the carrier drop detection threshold as the
latched output of the energy detector multiplied by the coefficient.

¹³ 16. (Previously Presented) A carrier detection system according to Claim ¹⁰ 14 wherein the selected data pattern in the data signal is at least one of a call menu (CM) signal and a joint menu (JM) signal.

¹⁴ 17. (Previously Presented) A carrier drop detection system for a V.8 standard modem startup sequence, the system comprising:
a receiver circuit that receives a signal;
a detector circuit coupled to the receiver circuit that detects at least one of a call menu (CM) signal and a joint menu (JM) signal from the received signal;
a signal strength detection circuit coupled to the receiver that outputs a received signal strength for the received signal;
a threshold circuit coupled to the receiver circuit that latches a carrier drop detection threshold based on a current value of the received signal strength responsive to detection of at least one of the CM and the JM signal by the receiver circuit; and
a comparator circuit coupled to the threshold circuit and the signal strength detection circuit that compares the received signal strength to the carrier drop detection threshold to detect a carrier drop corresponding to an end of the startup sequence.

18. (Canceled).

¹⁵ 19. (Currently Amended) ~~A system according to Claim 18~~ A carrier drop detection system comprising:
means for demodulating a received signal to provide signal data;
means for detecting a signal strength for a portion of the received signal corresponding to a selected data pattern in the signal data;
means for establishing a carrier drop detection threshold at a determined level relative to the signal strength; and
means for detecting a carrier drop based on the carrier drop detection threshold;
wherein the modem uses a V.8 standard during startup and the means for establishing ~~updating~~ comprises means for establishing ~~updating~~ the carrier drop detection threshold

responsive to a selected data pattern in the signal data corresponding to at least one of a call menu (CM) signal and a joint menu (JM) signal.

¹⁶ 20. (Previously Presented) A carrier drop detection system comprising:
means for demodulating a received signal to provide signal data;
means for setting a flag to indicate receipt of at least one of a valid call menu (CM) signal and a valid joint menu (JM) signal;
a signal strength detector coupled to the received signal and having an output corresponding to a signal strength level of the received signal;
means for latching an output of the signal strength detector responsive to setting of the flag;
means for setting a carrier drop detection threshold to a value a predetermined amount below the latched output of the signal strength detector responsive to setting of the flag; and
means for detecting a carrier drop based on the carrier drop detection threshold.

¹⁷ 21. (Original) A system according to Claim ¹⁶20 wherein the signal strength detector is a magnitude detector.

¹⁸ 22. (Original) A system according to Claim ¹⁶20 wherein the signal strength detector is an energy detector.

¹⁹ 23. (Original) A system according to Claim ¹⁸22 wherein the means for setting further comprises means for setting the carrier drop detection threshold to a level about 4 dB below the latched output of the energy detector responsive to setting of the flag.

²⁰ 24. (Previously presented) A system according to Claim ¹⁶20 wherein the means for detecting a carrier drop further comprises means for detecting a carrier drop corresponding to a silence transmission terminating a V.8 standard phase 1 and further comprising means for conditioning the modem to receive a phase 2 information (INFOO) signal.

²¹25. (Original) A system according to Claim ²⁰24 wherein the means for conditioning further comprises means for starting a differential phase shift keyed (DPSK) receiver that receives the INFO0 signal.

²²26. (Original) A system according to Claim ¹⁶20 wherein the means for setting a flag further comprises means for setting a predetermined memory location as the flag.

²³27. (Original) A system according to Claim ¹⁶20 wherein the means for setting a flag further comprises means for setting a latch output line to an active state.

28. (Canceled).

²⁴29. (Currently Amended) A computer program product ~~according to Claim 28 for carrier drop detection, comprising:~~

a computer readable storage medium having computer readable program code means embodied therein, the computer readable code means comprising:

computer readable code which demodulates a received signal to provide signal data;

computer readable code which detects a signal strength for a portion of the received signal corresponding to a selected data pattern in the signal data;

computer readable code which establishes a carrier drop detection threshold at a determined level relative to the signal strength; and

computer readable code which detects a carrier drop based on the carrier drop detection threshold; and

wherein the modem uses a V.8 standard during startup and the computer readable code which ~~updates~~ establishes a carrier drop detection threshold comprises computer readable code which ~~updates~~ establishes the carrier drop detection threshold responsive to a selected data pattern in the signal data corresponding to at least one of a call menu (CM) signal and a joint menu (JM) signal.

25 30. (Previously Presented) A computer program product for carrier drop detection, comprising:

a computer readable storage medium having computer readable program code means embodied therein, the computer readable code means comprising:

computer readable code which demodulates a received signal to provide signal data;

computer readable code which sets a flag to indicate receipt of at least one of a valid CM signal and a valid JM signal;

computer readable code which outputs a signal strength level of the received signal;

computer readable code which latches the output of the computer readable code which outputs a signal strength level responsive to setting of the flag;

computer readable code which sets a carrier drop detection threshold to a value a predetermined amount below the latched output responsive to setting of the flag; and

computer readable code which detects a carrier drop based on the carrier drop detection threshold.

26 31. (Original) A computer program product according to Claim, 25 30 wherein the computer readable code which outputs a signal strength level of the received signal outputs a magnitude.

27 32. (Original) A computer program product according to Claim, 25 30 wherein the computer readable code which outputs a signal strength level of the received signal outputs an energy level.

28 33. (Original) A computer program product according to Claim, 27 32 wherein the computer readable code which sets further comprises computer readable code which sets the

carrier drop detection threshold to a level about 4 dB below the latched output responsive to setting of the flag.

²⁹ 34. (Previously presented) A computer program product according to Claim ²⁵ 30 wherein the computer readable code which detects a carrier drop further comprises computer readable code which detects a carrier drop corresponding to a silence transmission terminating a V.8 standard phase 1 and further comprising computer readable code which conditions the modem to receive a phase 2 information (INFO0) signal.

³⁰ 35. (Original) A computer program product according to Claim ²⁹ 34 wherein the computer readable code which conditions further comprises computer readable code which starts a differential phase shift keyed (DPSK) receiver that receives the INFO0 signal.

³¹ 36. (Original) A computer program product according to Claim ²⁵ 30 wherein the computer readable code which sets a flag further comprises computer readable code which sets a predetermined memory location as the flag.

³² 37. (Original) A computer program product according to Claim ²⁵ 30 wherein the computer readable code which sets a flag further comprises computer readable code which sets a latch output line to an active state.